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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/613,456	07/03/2003	Hitoshi Sato	MAT-7871US2	6529
23122	7590	10/30/2006	EXAMINER	
RATNERPRESTIA				BRINEY III, WALTER F
P O BOX 980				ART UNIT
VALLEY FORGE, PA 19482-0980				PAPER NUMBER
				2615

DATE MAILED: 10/30/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/613,456	SATO ET AL.	
	Examiner	Art Unit	
	Walter F. Briney III	2615	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) Responsive to communication(s) filed on 03 July 2003.
 2a) This action is FINAL. 2b) This action is non-final.
 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) Claim(s) 21-24 is/are pending in the application.
 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
 5) Claim(s) _____ is/are allowed.
 6) Claim(s) 21-24 is/are rejected.
 7) Claim(s) _____ is/are objected to.
 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) The specification is objected to by the Examiner.
 10) The drawing(s) filed on _____ is/are: a) accepted or b) objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. 09/485,037.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) Notice of References Cited (PTO-892)
 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)
 3) Information Disclosure Statement(s) (PTO/SB/08)
 Paper No(s)/Mail Date 1/28/05 and 7/3/03.

4) Interview Summary (PTO-413)
 Paper No(s)/Mail Date. _____ .
 5) Notice of Informal Patent Application
 6) Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

1. **Claims 21-24 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement.**

Claims 21-24 contain subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Regarding the product-by-process aspect of claim 21 first, it is noted that the diaphragm of the claimed loudspeaker is manufactured by (1) heating a molded resin speaker diaphragm and (2) activating the surface of said diaphragm by applying plasma while keeping the temperature inside a reactive chamber below a heat deformation temperature of said diaphragm.

The heating, as disclosed in the specification appears to be an ancillary effect of applying plasma. The key being that the heat never rises above the heat deformation point of the diaphragm. This implies, with respect to the diaphragm structure by which a product-by-process claim is interpreted, that the shape of the diaphragm before and

after plasma activation is the same. However, to give weight to this implication, one of ordinary skill in the art must know what shape was given to the diaphragm to start with. This is neither given in the claim nor the specification, and thus, an adequate written description has not been provided. At most, figures 1 and 2 appear to illustrate a plurality of generally frusto-conical diaphragms 4, however, it is established that figures are not to be necessarily taken as drawn to scale. Therefore, the actual conical slope, ratio of inner and outer circumference and other critical diaphragm parameters are not defined. In being generous, one of ordinary skill could simply state that the limitation is broad, and that the process generally implies a non-deformed diaphragm. In this case, any diaphragm is applicable as prior art since there is no standard for measuring deformity—it is all relative.

The activation implies an increased wettability. However, the specification defines wettability in the units dynes/cm, whereas the art recognized units of wettability are degrees indicating the contact angle between a surface and a drop of liquid. Complicating this definition is the fact that several competing methods of wettability measurement are used, yielding different results. This evidences a lack of adequate written description since the wrong measurement is being communicated. Moreover, it is noted that measures including wetting tension and surface energy are functions of this angle and are given in the units dynes/cm. However, the wetting tension and surface energy are dependent on the liquid used in measurement, which is not disclosed along with the wettability measuring technique. Therefore, it is impossible to

determine a baseline for comparing the wettability of the output of the claimed process to the prior art.

2. **Claims 21-24 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.**

Claims 21-24 were shown above to either be unsupported by an adequate written description of the invention or fail to provide a baseline for determination when taken in conjunction with the specification. This failure to provide a baseline renders the claims indefinite.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

3. **Claims 21-24 are rejected under 35 U.S.C. 102(a) as being anticipated by the applicant's admitted prior art (figures 4 and 7; specification pages 1-3 and 6).**

Claim 21 is limited to “a loudspeaker.” Each of the elements of the claimed loudspeaker are anticipated by applicant's admitted prior art. See figure 7. The prior art loudspeaker includes a “magnetic circuit” 15a, a “frame” 16, a “diaphragm” 19 and a “voice coil” 18 all of which are arranged as claimed. The diaphragm is disclosed as a polyethylene resin. See page 2, lines 4-11. What is not clear from figure 7, is whether

the diaphragm 19 is the same as the one manufactured by the process of claim 21.

These limitations are treated below.

As noted in the 35 U.S.C. 112 rejections above it was shown that the process produces a diaphragm with no heat deformations. Granting that this is adequately supported in the specification, however, fails to provide a baseline diaphragm by which to measure the resulting shape. Therefore, a diaphragm of any shape anticipates this limitation.

As noted in the preceding 35 U.S.C. 112 rejections the plasma activation does increase wettability to roughly 44 dyn/cm. However, this measurement makes no sense. At most it can be said that the wetting tension or surface energy is increased to 44 dyn/cm, but since these measurements are test liquid dependent, and the liquid has not been disclosed, any diaphragm wettability anticipates this limitation. See applicant's specification page 6, line 25, through page 7, line 2.

Moreover, the admitted prior art states that the prior art activation process yields a wettability of 46 dyn/cm, however, only for a short time. While short lived, the wettability is roughly the same for some period of time. It is noted that if the wettability remains at 46 dyn/cm for a period long enough to test, it remains at 46 dyn/cm long enough to be used in forming an adhesive bond to a voice coil and speaker frame. See applicant's specification page 6, lines 21-24. Therefore, the applicant's admitted prior art anticipates all limitations of the claim.

Claim 22 is limited to "a loudspeaker" that is essentially the same as that recited in claim 21, and is rejected for the same reasons.

Claim 24 is limited to “a loudspeaker according to claim 21,” as covered by the applicant’s admitted prior art. The specification indicates on page 6, lines 14-17, that the use of the meshed metal frame increases uniformity of wettability. However, the prior art corona discharge method disclosed on page 2, lines 18-25, is said to achieve the same result with sufficiently large electrodes. Moreover, simply not treating any prior art diaphragm, but simply manufacturing one to specific dimension achieves uniform wettability. Therefore, the applicant’s admitted prior art anticipates all limitations of the claim.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. **Claim 23 is rejected under 35 U.S.C. 103(a) as being unpatentable over the applicant’s admitted prior art in view of Inoue (US Patent 4,351,411).**

Claim 23 is limited to “a loudspeaker according to claim 21,” as covered by the applicant’s admitted prior art. The method of diaphragm formation is not disclosed in the prior art section of the applicant’s specification, it cannot be said that the prior art anticipates one of “injection molding and sheet forming,” however, this deficiency is overcome by an obvious modification.

In particular, since the applicant's admitted prior art does not prescribe a particular forming method, the forming method cannot be said to be critical, so one of ordinary skill in the art would be inherently motivated to find any practical forming process amongst the known prior art. The loudspeaker art happens to be replete with references to injection molding used in forming diaphragms consisting of resins. For example, see the Abstract of Inoue (US Patent 4,351,411).

It would have been obvious to one of ordinary skill in the art to form the synthetic polyethylene resin of the applicant's admitted prior art into a diaphragm form using injection molding as taught by Inoue simply because the forming process was not critical to the applicant's admitted prior art.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Walter F. Briney III whose telephone number is 571-272-7513. The examiner can normally be reached on M-F 8am - 4:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sinh Tran can be reached on 571-272-7564. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.


SINH TRAN
SUPERVISORY PATENT EXAMINER

WFB